R E M A R K S

It is respectfully requested that a copy initialed by the Examiner of the PTO Form 1449 filed with the application on July 18, 2001 be returned to the undersigned to complete the Applicants' file.

It is noted, with appreciation, that the Examiner has indicated that although claims 20-22 are objected to, these claims would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 11-19 have been rejected by the Examiner under 35 USC 103(a) as being unpatentable over Tichner et al., U.S. Patent 4,342,658. This rejection is respectfully traversed.

The present invention is directed to a multi-purpose aqueous cooling lubricant which is suitable for mechanically working many different metals and/or metal alloys. The cooling lubricant, which contains as essential components thereof a phosphate ester compound and a dicarboxylic acid, contributes to excellent corrosion inhibiting and lubrication properties. The present invention also relates to a method for mechanically working metals and alloys in the presence of an aqueous cooling lubricant having a pH of 6-10 and containing as necessary components a monophosphate ester of formula I or a diphosphate ester of formula II and a succinic acid of formula III. The chemical definitions of formula I, formula II and formula III can be seen by referring to claim 1 of the present application. The monophosphate ester of formula I contains a comparative small alkyl group having 1-12 carbon atoms. The

succinic acids are very unique since they exhibit two carboxylic acid groups separated by only two carbon atoms as well as a larger aliphatic group in the end position of the molecule. In the present invention, the aliphatic group R_2 contains 4-10 carbon atoms.

The tests in the working example show that the combination of a phosphate ester and a succinic acid, according to the present invention, provides an aqueous cooling lubricant possessing excellent anti-corrosive and effective lubricating properties and can advantageously be used in the metal working of many metals and alloys. In this connection, please refer to the table found on page 6 of the present application wherein from the results disclosed therein it is evident that the cooling lubricant C of the present invention possesses excellent anti-corrosion properties and is superior to formulations A and B with respect to lubrication ability.

The Tichner et al. reference relates to a hydraulic fluid or a metal working fluid, which contains as necessary components a phosphate ester and a dialkanolamide. The phosphate ester is a diester or a monoester or a mixture thereof. See Col. 2, lines 15-34. The phosphate ester always contains ester groups having an alkylaryl group. The ester groups are obtained by using monionic surfactants, for example nonylphenol + 9-11 ethylene oxide. Dinonylphenol + 2 ethylene oxide, and dodecylphenol + 10 ethylene oxide. In these examples, the alkylaryl group contains 15, 24 and 18 carbon atoms, respectively. It is clear that the obligatory phosphate esters in the Tichner reference are different from the phosphate esters in the present invention, as

the latter phosphate esters contain only aliphatic groups and not the alkylaryl groups of the Tichner et al. reference.

In addition to the phosphate esters, the fluids disclosed in Tichner also must contain an alkyldialkanolamide. In the present invention there is no requirement that the mechanical working lubricant contains an alkyldialkanolamide.

From the above discussion it is evident that none of the necessary components in the present invention are disclosed in Tichner. Furthermore, it is alleged in the Official Action that Tichner teaches the use of a diacid containing 21 carbon atoms (Col. 7, line 63 to Col. 8, line 3). It should be observed that these lines of the patent describe the preparation of the necessary alkyldiethanolamide. In this preparation, the diacid is reacted with dietanolamine in order to obtain the diamide compound. Thus there is no disclosure that the hydraulic fluids or the metalworking fluids of Tichner contain the diacid as such.

There are no teachings in Tichner that suggest the replacement of the alkylaryl phosphate ester and the diethanolamide with the aliphatic phosphate ester and the succinic acid as claimed in the present invention. Nor is it disclosed or suggested in the Tichner patent that the combination as claimed in the present application might result in an aqueous cooling lubricant with excellent lubricating and anticorrosive properties useful for the mechanical working of many different metals and alloys.

In view of the many distinctions between the present invention and the prior art relied upon by the Examiner, and further in view of the advantageous results which can be found by referring to the Table on Page 6 of the present application, wherein the cooling lubricant C is found to be particularly advantageous with respect to corrosion-inhibiting and lubrication properties, it is believed that the present invention is clearly, patentably distinguishable over the Tichner et al. patent for all of the reasons set forth hereinabove. Accordingly, reconsideration of the rejection and allowance of all of the claims of the present invention are respectfully requested.

Conclusion

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Mr. Joseph A. Kolasch (Reg. No. 22,463) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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Attachments: Abstract of the Disclosure